Amendments to the Claims:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A method of determining aberration of a projection system of a lithographic apparatus comprising:

projecting a reference test pattern in the lithographic apparatus;

projecting a second test pattern in the lithographic apparatus;

measuring relative displacements between items in resulting images of said reference test pattern and said second test pattern; and

determining information on the aberration of the projection system, using said measurements,

wherein projecting the second test pattern comprises filtering to select particular radiation paths through ~~though~~ the projection system,; and

wherein the measuring is performed for a plurality of images of the second test pattern obtained at planes displaced along an optical axis relative to each other.

2. (Original) A method according to claim 1, further comprising calculating, for the plurality of images, a rate of change of displacement of portions of the second test pattern with respect to displacement along the optical axis.

3. (Original) A method according to claim 2, further comprising calculating a location in a pupil of the projection system traversed by the radiation for particular portions of the second test pattern using the calculated rate of change.

4. (Original) A method according to claim 1, wherein coordinates of a filter used for the filtering are included as variable parameters in the calculations for determining the aberration information.

5. (Original) A method according to claim 1, wherein spherical aberration introduced by a filter used for the filtering is included as a variable parameter in determining the aberration information.

6. (Currently Amended) A method of determining aberration of a projection system of a lithographic apparatus comprising:

projecting a reference test pattern in the lithographic apparatus;

projecting a second test pattern in the lithographic apparatus;

measuring relative displacements between items in resulting images of said reference test pattern and said second test pattern; and

determining information on the aberration of the projection system, using said measurements,

wherein projecting the second test pattern comprises filtering to select particular radiation paths through ~~though~~ the projection system,~~;~~ and

wherein coordinates of a ~~the~~ filter used for the filtering are included as variable parameters in calculations for said determining.

7. (Currently Amended) A method of determining aberration of a projection system of a lithographic apparatus comprising:

projecting a reference test pattern in the lithographic apparatus;

projecting a second test pattern in the lithographic apparatus;

measuring relative displacements between items in resulting images of said reference test pattern and said second test pattern; and

determining information on the aberration of the projection system, using said measurements,

wherein projecting the second test pattern comprises filtering to select particular radiation paths through ~~though~~ the projection system,~~;~~ and

wherein spherical aberration introduced by a filter used for the filtering is included as a variable parameter in determining the aberration information.

8. (Original) A method according to claim 7, wherein the spherical aberration is used to correct the measured displacements between portions of the resulting images of said reference test pattern and said second test pattern.

9. (Currently Amended) A device manufacturing method comprising:

projecting a patterned beam of radiation onto a target portion of a substrate; ~~and~~

determining an aberration of a projection system used to project the patterned beam,

comprising:

projecting a reference test pattern,

projecting a second test pattern, the projecting of the second test pattern comprising filtering to select particular radiation paths through the projection system,

measuring relative displacements between items in resulting images of the reference test pattern and the second test pattern, and

determining information on the aberration of the projection system, using said measurements,

wherein (i) the measuring is performed for a plurality of images of the second test pattern obtained at planes displaced along an optical axis relative to each other, (ii) coordinates of a filter used for the filtering are included as variable parameters in calculations for said determining, (iii) spherical aberration introduced by a filter used for the filtering is included as a variable parameter in determining the aberration information, or (iv) any combination of (i)-(iii); and

correcting for said aberration to reduce the aberration of the patterned beam projected onto the target portion of the substrate.

10. (Cancelled)

11. (New) A method according to claim 6, wherein the measuring is performed for a plurality of images of the second test pattern obtained at planes displaced along an optical axis relative to each other and further comprising calculating, for the plurality of images, a rate of change of displacement of portions of the second test pattern with respect to displacement along the optical axis.

12. (New) A method according to claim 11, further comprising calculating a location in a pupil of the projection system traversed by the radiation for particular portions of the second test pattern using the calculated rate of change.

13. (New) A method according to claim 6, wherein spherical aberration introduced by a filter used for the filtering is included as a variable parameter in determining the aberration information.

14. (New) A method according to claim 13, wherein the spherical aberration is used to correct the measured displacements between portions of the resulting images of said reference test pattern and said second test pattern.

15. (New) A method according to claim 7, wherein the measuring is performed for a plurality of images of the second test pattern obtained at planes displaced along an optical axis relative to each other and further comprising calculating, for the plurality of images, a rate of change of displacement of portions of the second test pattern with respect to displacement along the optical axis.

16. (New) A method according to claim 15, further comprising calculating a location in a pupil of the projection system traversed by the radiation for particular portions of the second test pattern using the calculated rate of change.

17. (New) A method according to claim 5, wherein the spherical aberration is used to correct the measured displacements between portions of the resulting images of said reference test pattern and said second test pattern.

18. (New) A method according to claim 9, further comprising calculating, for the plurality of images, a rate of change of displacement of portions of the second test pattern with respect to displacement along the optical axis.

19. (New) A method according to claim 18, further comprising calculating a location in a pupil of the projection system traversed by the radiation for particular portions of the second test pattern using the calculated rate of change.

20. (New) A method according to claim 9, wherein the spherical aberration is used to correct the measured displacements between portions of the resulting images of the reference test pattern and the second test pattern.